

Exercise 3

Rudolf Chrispens
Habib Gahbiche

Notation

In the following we assume that corners of any quadrilateral are named as in figure 1. In particular corner 1 and corner 3 can never be neighbours.

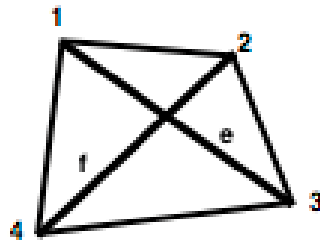


figure 1: naming convention. Corner 1 is also named A, corner 2 is named B etc... in 3.1

3.1

We implemented `area()` with Bretschneider's formula (see also en.wikipedia.org/wiki/Bretschneider's_formula). f and e are the diagonals

3.2

`Subdivide()` takes all the necessary information from

3.3

IDE warns that no actual move will happen within the move assignment operator `Quad3D &Quad3D::operator=(Quad3D &&_Quad3D)`.

We didn't expect that.

3.4

—

3.5

In order to compute the third coordinate, we use the fact that the length between corner 1 and corner 4 is known (otherwise the problem is not solvable) and that rectangles have 90 degree angles only. Corner 4 is computed as follows:

- determine the unit vector that describes the segment [corner1, corner2]
- rotate the unit vector by -90 degrees (negative 90 because as mentioned above, corner 1 and corner 3 are not allowed to be neighbours, see figure 1)
- finally, we compute corner 4's coordinates by starting with the vector corner 1 and scaling with *length* in the direction of the rotated unit vector.

We use the same approach for Square but we replace *length* with the distance between corner 1 and corner 2.